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09/518,328	03/03/2000	John J Burns	33012/284/101	6224

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Charles A Johnson
Unisys Corporation
Law Department M S 4773
2470 Highcrest Road
Roseville, MN 55113

EXAMINER

CRAIG, DWIN M

ART UNIT

PAPER NUMBER

2123

DATE MAILED: 01/30/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/518,328

Applicant(s)

BURNS, JOHN J

Examiner

Dwin M Craig

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11-13-2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 March 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

1. Claims 1-20 have been presented for reconsideration in view of Applicant's amended specification and arguments.

Response to Arguments

2. Applicants arguments filed on 11-13-2003 have been fully considered. Examiners response is as follows:

2.1 Regarding Applicants response in to the Examiner's objection to the drawings:

Applicants have argued that:

The Examiner has objected to the drawings. Specifically, the Examiner has found that Figs. 1-3 contain only prior art under MPEP 608.02(g). This was not Applicant's intention nor does Applicant believe that the specification supports the Examiner's conclusion. However, the Examiner states:

The Examiner notes that on pages 6-10 of Applicant's specification that figures 1-3 are described as typical and legacy. Though the figures are described as containing "legacy" elements, this is not deemed to render the corresponding figure prior art Figs. 1-3 show the application of the DCP in providing the interface amongst various legacy system elements. To the extent that the illustrated DCP is implemented utilizing Applicant's novel emulation approach, which is Applicant's preferred embodiment, the system is not "prior art" in the sense of MPEP 608.02(g). Nevertheless, if the language of Applicant's specification has caused the confusion, it is deemed appropriate that the specification be amended as provided above to alleviate this alleged ambiguity. No new matter has been added. Furthermore, these amendments to the specification are deemed to render the Examiner's objections to Figs. 1-3 moot.

The Examiner asserts that the Applicant has already stated, on the record, by means of the original version of the specification that figures 1-3 are prior art teachings. The addition of the "*new matter*" to the specification, specifically on pages 6 & 7 is improper and the Examiner upholds the earlier objection to the drawings for not including the label "*prior art*". The

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Examiner finds Applicant's argument to be unpersuasive and upholds the earlier objection to the drawings.

2.2 Regarding Applicant's response to the improper incorporation by reference of pending application 09/518,327:

Applicants have argued:

The Examiner has further properly objected to the specification as failing to provide the required information with regard to the listed cross-referenced, co-pending, commonly assigned application. The specification has been amended to provide the required information. Because the Examiner's Official Action suggests that this amendment will completely dispose of the rejection of claims 3-5, 8-10, 13-14, and 18-20 under 35 U.S.C. 112, first paragraph, Applicant deems it unnecessary and unhelpful to submit further evidence of enablement at this time.

The Examiner has found Applicant's arguments to be persuasive and withdraws the objection to the specification in regards to the improper incorporation by reference of essential subject matter. The Examiner withdraws the 35 U.S.C. 112 1st paragraph rejections of Claims 3-5, 8-10, 13, 14, 18-20.

2.3 Regarding Applicants response to the 35 U.S.C. 102(b) rejections of Claims 1, 2, 6, 7, 11 and 16:

Applicants have argued:

Hoang does not contain "every element of the claimed invention". Specifically, with regard to claims 1 and 11 the Examiner states:

- AND -

First, Fig. 3, Item 316, is not an "emulation object". Fig. 3 identifies it as "Serial VxD". Column 4, lines 6-7, further define Item 316 stating:

.... serial VxD 316, part of the OS infrastructure 310,

Serial VxD 316 is that module within the Operating System, which provides the software interface to the hardware UART 317. Item 316 is specifically not an "emulation object" as is limiting of the claims.

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Second, Fig. 3, items 332 and 334 are not emulation objects "wherein each of said emulation objects emulates operation of a different one of a plurality of target processors". Item 332 is identified in Fig. 3 as '16550 UART VxD". Column 3, lines states:

The UART VxD 332 is a software emulation of a conventional UART

Those of skill in the art will recognize that UART means Universal Asynchronous Receiver/Transmitter. In essence, a UART is a serial-to-parallel and parallel-to-serial converter, it is a specific piece of hardware which is not a "target processor" as required by the claimed invention.

VxD's are software device drivers that virtualize the hardware element that they are used to abstract. The Examiner notes that Applicant has not invoked 35 U.S.C. 112 6th paragraph and therefore the existing claim language is not limited to interpretation from the disclosed preferred embodiment in the Applicants specification. The Applicant is correct; a UART is not a processor. However it is noted that Applicant's claim language is so general that any prior art reference that teaches the emulation of a processor will reads on the claimed limitation of a "target processor". The Examiner has found Applicants arguments to be persuasive and withdraws the earlier 35 U.S.C. 102(b) rejections of Claims 1 and 11.

Drawings

3. Figures 1-3 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance. The Examiner notes that on pages 6-10 of Applicant's specification that figures 1-3 are described as typical and legacy.

Specification

4. The amendment filed 11-13-2003 is objected to under 35 U.S.C. 132 because it introduces new matter into the disclosure. 35 U.S.C. 132 states that no amendment shall introduce new matter into the disclosure of the invention. The added material which is not supported by the original disclosure is as follows:

- Paragraph on page 6 “**FIG. 1** is a conceptual diagram of an environment employing the DCP.”.
- Paragraph on page 7 lines 2-3 “This basic system may include...”.

Applicant is required to cancel the new matter in the reply to this Office Action.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. **Claims 1, 2, 6, 7, 11 and 16** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Hoang U.S. Patent 5,925,114** in view of **Mitchell U.S. Patent 6,230,119**.

5.1 As regards independent **Claims 1 and 11** the *Hoang* reference discloses a data processing system/method (**Figure 1**), having a first processor (**Figure 1 Item 102**), a first software architecture (**Figure 3**), a plurality of emulation objects (**Figure 3, Items 332, 334 and 316**), and has a software architecture different from said first software architecture (**Col. 6 Lines 1-22**).

However, the *Hoang* reference does not expressly disclose the a method or apparatus for emulation of a target processor.

The *Hoang* reference teaches that there is a cost reduction advantage to emulating hardware components in software (**Col. 1 Lines 42-46**). An artisan of ordinary skill would have been motivated to look in the Emulation art to find a method of emulating a processor with software. In the emulation art the *Mitchell* reference teaches a method and apparatus for software emulation of a processor (**Figure 1 & Col. 2 Lines 3-8**).

Thus, it would have been obvious, to one of ordinary skill in the art, at the time the invention was made, to have combined the software emulation technology of the *Hoang* reference with the processor emulation technology of the *Mitchell* reference because, software driven emulators are is flexible and aids in the emulation/debugging process of developing a new processor (**Mitchell Col. 2 Lines 3-9**).

5.2 As regards independent **Claims 6 and 16** the *Hoang* reference discloses an apparatus (**Figure 1**).

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5.3 As regards **Claims 2 and 7** the *Hoang* reference discloses and emulation object and a computer program that are compatible with the first software architecture (**Figure 3, Col. 3 Lines 60-67, Co. 4 Lines 1-9**).

6. **Claims 3-5, 8-10, 12-15 and 17-20** are rejected under 35 U.S.C. 103(a) over **Hoang U.S. Patent 5,925,114** and in view of **Mitchell U.S. Patent 6,230,119** and in further view of **Orton et al. U.S. Patent 5,379,432** and in further view of **Scantlin U.S. Patent 5,574,927**.

6.1 As regards independent **Claims 1, 2, 6, 7, 11 and 16** see paragraphs 5.1, 5.2 and 5.3 above.

6.2 As regards **Claim 3, 9, 15, 17 and 18** the *Hoang* reference does not expressly disclose an array of procedures or a list of instructions compatible with a second software architecture.

The *Orton et al.* reference discloses procedure calls (**Figure 2 Item 208**).

It would have been obvious to one of ordinary skill in the art, at the time of the invention, to have modified the *Hoang* reference with the *Orton et al.* reference because, (*motivation to combine*) the *Orton et al.* reference discloses an object-oriented interface for a procedural operating system (***Orton et al., Col. 1 Lines 20-32***).

The *Scantlin* reference discloses a list of instructions compatible with a second software architecture (**Figure 3, Item 28**).

It would have been obvious to one of ordinary skill in the art, to have modified the *Hoang* reference with the *Scantlin* reference because, (*motivation to combine*) the *Scantlin* reference discloses a method of emulating the instruction execution of one type of processor on another (***Scantlin, Col. 2 Lines 12-49***).

6.3 As regards **Claims 4, 8, 13, 14, 19 and 20** the *Hoang* reference does not expressly disclose specialized instructions.

The *Scantlin* reference discloses specialized instructions for emulating another processor (**Figure 7, Col. 2 Lines 12-49**).

It would have been obvious to one of ordinary skill in the art, to have modified the *Hoang* reference with the *Scantlin* reference because, (*motivation to combine*) the *Scantlin* reference discloses a method of emulating the instruction execution of one type of processor on another (*Scantlin, Col. 2 Lines 12-49*).

6.4 As regards **Claim 5** the *Hoang* reference does not expressly disclose an array of procedures corresponds to a list of instructions selected by using an operation code and a corresponding four-bit field.

The *Scantlin* reference discloses a four-bit field operational code field for selecting the correct emulation registers which emulate the target machine instructions (**Figure 7, Col. 9 Lines 12-67**).

It would have been obvious to one of ordinary skill in the art, to have modified the *Hoang* reference with the *Scantlin* reference because, (*motivation to combine*) the *Scantlin* reference discloses a method of emulating the instruction execution of one type of processor on another (*Scantlin, Col. 2 Lines 12-49*).

6.5 As regards **Claim 10** the *Hoang* reference does not expressly disclose an array of instructions directly linked to a different set of instructions.

The *Scantlin* reference discloses an array of instructions directly linked to a different set of instructions (**Figures 2, 5A, 5B, 7**).

It would have been obvious to one of ordinary skill in the art, to have modified the *Hoang* reference with the *Scantlin* reference because, (*motivation to combine*) the *Scantlin* reference discloses a method of emulating the instruction execution of one type of processor on another (*Scantlin, Col. 2 Lines 12-49*).

6.6 As regards **Claim 12** the *Hoang* reference does not expressly disclose multiple target processors.

The *Scantlin* reference discloses a plurality of target processors (**Col. 3 Lines 34-36, Col. 4 Lines 34-67, Col. 5 Lines 1-2**).

It would have been obvious to one of ordinary skill in the art, to have modified the *Hoang* reference with the *Scantlin* reference because, (*motivation to combine*) the *Scantlin* reference discloses a method of emulating the instruction execution of one type of processor on another (*Scantlin, Col. 2 Lines 12-49*).

Conclusion

7. **Claims 1-20** are rejected and the specification and the drawings are objected to. This action is **NON-FINAL**.

7.1 Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dwain M Craig whose telephone number is 703 305-7150. The examiner can normally be reached on 9:00 - 5:00 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kevin Teska can be reached on 703 305-9704. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9306.

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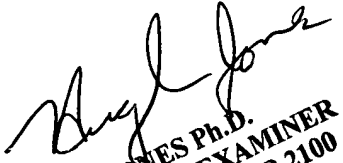
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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703 305-3900.

DMC

January 25, 2004


HUGH JONES Ph.D.
PRIMARY PATENT EXAMINER
TECHNOLOGY CENTER 2100